STATEMENT OF BASIS

Alloy Resources Inc
Albertville, Alabama
Marshall County
711-0023

This proposed renewal Title V Major Source Operating Permit (MSOP) is issued under the provisions of ADEM Admin. Code r. 335-3-16. The above-referenced applicant has applied for a Title V Permit. The applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans and other documents, which were submitted on January 7, 2016, and are attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit. Alloy Resources Inc. was classified as a minor source prior to promulgation of 40 CFR 63, Subpart YYYYY.

The facility is manned 8 hours per day, five days per week, or approximately 2000 hours per year. Based on the Title V permit application, this facility is not a potential major source for any criterion pollutant. The facility is categorized as a major source for Title V since it is subject to 40 CFR Part 63, Subpart YYYYY, NESHAP for Area Source: Electric Arc Furnace Steel Making Facilities, specifically 63.10680. Alloy Resources is classified as a small foundry under Subpart YYYYY. The rule requires all Electric Arc Furnace (EAF) steelmaking facilities to obtain a Title V permit.

Alloy Resources is a specialty metal foundry. The primary product from this plant is specialty steel ingots. Alloy Resources receives stainless steel scrap from various sources. The incoming scrap is mixed with alloy materials and limestone to produce a charge. Approximately 5.0 tons of the metal charge is placed per batch or “heat” in one of the two electric arc furnaces (EAF). The EAF is equipped with electrodes that are lowered in through the roof. An electric current passes through the scrap metal. During this process, alloying agents can be added to refine the product and produce the desired metallic properties. Emissions from each EAF are collected by hoods and sent to individual baghouses for particulate control. Each EAF has its own dedicated baghouse. Batch time is approximately 90 minutes.

After the melting and refining, the steel is poured into preheated ladles and either conveyed to the pouring station or transferred to the Argon-Oxygen Decarburization (AOD) vessel. The ladles are preheated in one of the five natural gas or propane fired 7 MMBtu/hr ladle preheaters. The AOD process allows the oxidation of carbon from the metal without excess chromium oxidation or high temperatures. This is accomplished by introducing inert gases (argon) into the metal through tuyeres. The amount of inert gas added to the metal increases as the carbon content of the metal decreases.

Once it is determined that the metal is fully refined, it is poured back into the ladle and transferred to the pouring station. Emissions from the AOD process are collected by a

baghouse. Batch time is approximately 120 minutes. The molten steel is poured into pre-fabricated forms to cool and then transferred to a final cooling bin. There are fugitive particulate emissions that are released to the atmosphere via the building.

The facility is subject to the National Emission Standards for Hazardous Air Pollutants Electric Arc Furnace Steel Making Facilities found in 40 CFR Part 63, Subpart YYYYY, 40 CFR Part 63, Subpart ZZZZZ and NSPS 40 CFR 60 Subpart AA and AAa. Several sources at the facility are also subject to Compliance Assurance Monitoring (CAM) for particulate matter.

The significant sources of air pollutants at the facility are as follows:

Charge Handling
Two Electric Arc Furnaces (#1 and #2) with individual Baghouses
AOD Vessel
Pouring, Casting and Cooling
Abrasive Blasting
Miscellaneous Facility Wide

Charge Handling

Emission Standards:

Particulate Matter

> When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape a building or equipment in such a manner and amount as to cause a nuisance or to avoid any rule or regulation, the Director may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.
>
> ADEM Admin. Code R. 335-3-4-.02(3)

Periodic Monitoring:

> There are no specific monitoring requirements for the charge handling area, this area will be monitored and action taken as necessary to minimize emissions.

Compliance Assurance Monitoring (CAM)

> This unit is not subject Compliance Assurance Monitoring because it does not have a control device and the pre-controlled emissions are not greater than the major source threshold.

Two Electric Arc Furnaces (#1 and #2) with individual Baghouses

Emissions Standards:

Particulate Matter

PM in excess of 0.80 lb/ton of steel produced

40 CFR §63.10686(c)(1)

Or

12 mg/dscm (0.0052 grains of PM per dry standard cubic foot (gr/dscf))

40 CFR §60.272 (a)(1)

or

$E = 3.59\ (P)^{0.62}$ ($P < 30$ tons/hr)
$E = 17.31(P)^{0.16}$ ($P \geq 30$ tons/hr)
Where E = Emissions in pounds per hour
P = Process weight per hour in tons per hour

ADEM Admin. Code r. 335-3-4-.04(1)

Opacity

Emissions shall not exceed 20% equivalent opacity as determined by a six-minute average, except during one six-minute period in any 60 minute period the equivalent opacity may exceed 20% but shall not exceed 40%.

ADEM Admin. Code r. 335-3-4-.01

When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape a building or equipment in such a manner and amount as to cause a nuisance or to avoid any rule or regulation, the Director may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

ADEM Admin. Code R. 335-3-4-.02(3)

No owner or operator shall discharge into the atmosphere from an electric arc furnace (EAF) any gases which exit from a control device and exhibit 3 percent opacity or greater.

No owner or operator shall discharge into the atmosphere from an electric arc furnace (EAF) any gases which exit from a shop, due solely to the operations of any EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.

a.) Shop opacity less than 20 percent may occur during charging periods.

b.) Shop Opacity less than 40 percent may occur during tapping periods.

c.) The shop opacity standards shall apply only during periods when the monitoring parameter limits specified in §60.274(b) are being established according to §60.274(c) and (g) unless the owner or operator elects to perform daily shop opacity observations in lieu of furnace static pressure monitoring as provided for under §60.273(d).

d.) Where the capture system is operated such that the roof of the shop is closed during charge and the tap, and emissions to the atmosphere are prevented until the roof is opened after completion of the charge or the tap, the shop opacity standards shall apply when the roof is opened and shall continue to apply for the length of time defined by the charging or tapping periods.

40 CFR §60.272 (a)(2)&(3)

No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from dust handling equipment any gases which exhibit 10 percent opacity or greater.

40 CFR §60.272 (b)

Expected Emissions:

Expected particulate matter PM emissions from the Two Electric Arc Furnaces are 0.15 lb/hr (0.66 TPY). Based on test data.

Emissions Monitoring:

All six-minute periods during which the average opacity is three percent or greater shall indicate a period of excess emission, and shall be reported to the Administrator semi-annually.

40 CFR §60.273(b)

Visible emission observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with method 9 of appendix A to this part. If visible emissions occur at more than one point, the opacity shall be recorded for any points where visible emissions are observed. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in §60.272(a).

40 CFR §60.273(c)

The owner or operator shall maintain daily records of the following information:

(1) Time and duration of each charge;
(2) Time and duration of each tap;
(3) All flow data obtained in paragraph (b) of this section.
(4) All Pressure data obtained under paragraph (f) of this section or Method 9 data.

40 CFR §60.274(a)

The facility shall perform a check and record on a once-per-shift basis furnace static pressure and either: check and record the control system fan motor amperes and damper positions on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; ***or*** install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of +/- 10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions.

40 CFR §60.274(b)

The facility shall perform a **monthly** operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers, and damper switches) Perform observations of physical appearance of the equipment the hopper, fan, and cleaning cycle for proper operation and complete a visual check of all hoods and ductwork to verify proper operation of the baghouse, flow constrictions caused by dents or accumulated dust in ductwork or fan erosion. Any deficiences shall be noted and proper maintenance performed.

40 CFR §60.274 (e)

The facility will inspect baghouse structure, access doors, door seals and bags **annually** and report any repairs or observed problems.

ADEM Admin. Code R. 335-3-16-.05

Opacity

The facility's CAM plan requires daily visible emissions inspections performed according to 40 CFR Part 60 Method 9 requirements.

Test Methods and Procedures:

Performance testing shall be conducted in accordance with §60.275 as required.

Recordkeeping and Reporting Requirements:

Records of the measurements required in §60.274 must be retained for at least 2 years following the date of the measurement.

The facility shall submit a written report of exceedances of the control device opacity to the administrator semi-annually.

The facility shall record furnace static pressure and report pressures that exceed established values under §60.274(g) and operation of control system fan motor ampheres at values exceeding +/- 15 percent of the value established under §60.274(c). Operation at such values shall be reported to the administrator semi-annually.

The facility shall maintain records of all shop opacity observations made in accordance with §60.273(d). All shop opacity observations in excess of the emission limit specified in §60.272(a)(3) shall indicate a period of excess emission, and shall be reported to the administrator semi-annually.

40 CFR §60.276 (a-e as applicable)

Compliance Assurance Monitoring (CAM)

This unit has potential pre-control particulate matter emissions greater than the major source amount which is controlled by a baghouse. Small CAM is applicable to this unit for the particulate matter emissions. The facility shall monitor the visible emissions from the baghouse daily during operations by someone trained in method 9 opacity reading. Details of the CAM Plan are attached to this document.

Binder Formulation Management Practices:

This facility must comply with pollution prevention management practices for Binder Formulations in §63.10886 as applicable.

For each furfuryl alcohol warm box mold or core making line at a new or existing iron and steel foundry, you must use a binder chemical formulation that does not use methanol as a specific ingredient of the catalyst formulation.

40 CFR 63 Subpart ZZZZZ

Metallic Scrap & Mercury Switches Management Practices:

This facility must comply with pollution prevention management practices for metallic scrap and mercury switches in §63.10885 as applicable. (Also see Miscellaneous Facility Wide requirements for details)

40 CFR 63 Subpart ZZZZZ

AOD Vessel

Emissions Standards:

Particulate Matter

PM in excess of 0.80 lb/ton of steel produced

40 CFR §63.10686(c)(1)

or

12 mg/dscm (0.0052 grains of PM per dry standard cubic foot (gr/dscf))

40 CFR §60.272 a(a)(1)

or

$E = 3.59\ (P)^{0.62}$ (P < 30 tons/hr)
$E = 17.31(P)^{0.16}$ ($P \geq 30$ tons/hr)
Where E = Emissions in pounds per hour
P = Process weight per hour in tons per hour
ADEM Admin. Code r. 335-3-4-.04(1)

Opacity

Emissions shall not exceed 20% equivalent opacity as determined by a six-minute average, except during one six-minute period in any 60 minute period the equivalent opacity may exceed 20% but shall not exceed 40%.

ADEM Admin. Code r. 335-3-4-.01

When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape a building or equipment in such a manner and amount as to cause a nuisance or to avoid any rule or regulation, the Director may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

ADEM Admin. Code R. 335-3-4-.02(3)

No owner or operator shall discharge into the atmosphere from and electric arc furnace (EAF) or AOD vessel any gases which exit from a control device and exhibit 3 percent opacity or greater.

No owner or operator shall discharge into the atmosphere from an electric arc furnace (EAF) or AOD any gases which exit from a shop, due solely to the operations of any EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.

40 CFR §60.272a(a)(2)&(3)

No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from dust handling equipment any gases which exhibit 10 percent opacity or greater.

40 CFR §60.272a(b)

Expected Emissions:

Expected particulate matter emissions from the Argon-Oxygen Decarborization Vessel are 0.16 lb/hr or 0.70 TPY. This is based on the stack testing data and 99.9% control efficiency as guaranteed by the manufacturer.

Emission Monitoring:

Particulate Matter

The NSPS for Iron and Steel Foundries found in 40 CFR Part 60, Subpart AAa, requires specific monitoring for a baghouse as follows:

The facility shall perform a **monthly** operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers, and damper switches) Perform observations of the hopper, fan, and cleaning cycle for proper operation and complete a visual check of all hoods and ductwork to verify proper operation of the baghouse.

40 CFR §60.274a (d)

The facility will inspect baghouse structure, access doors, door seals and bags annually and report any repairs or observed problems.

ADEM Admin. Code R. 335-3-16-.05

Opacity

The facility's CAM plan requires daily visible emissions inspections performed according to 40 CFR Part 60 Method 9 requirements.

Test Methods and Procedures:

Performance testing shall be conducted in accordance with §60.275a as required.

Recordkeeping and Reporting Requirements:

Records of the measurements required in §60.274a must be retained for at least 2 years following the date of the measurement.

40 CFR §60.276a(a)

The facility shall submit a written report of exceedances of the control device opacity to the administrator semi-annually. For the purpose of these reports, exceedences are defined as all 6-minute periods during which the average opacity is 3 percent or greater.

40 CFR §60.276a(b)

The facility shall maintain records of all shop opacity observations made in accordance with §60.273a(d). All shop opacity observations in excess of the emission limit specified in §60.272a(a)(3) shall indicate a period of excess emission, and shall be reported to the administrator semi-annually.

40 CFR §60.276a(g)

Compliance Assurance Monitoring (CAM)

This unit has potential pre-control particulate matter emissions greater than the major source amount which is controlled by a baghouse. Small CAM is applicable to this unit for the particulate matter emissions. The facility shall monitor the visible emissions from the baghouse daily during operations by someone trained in method 9 opacity reading. Details of the CAM Plan are attached to this document.

Pouring ,Casting and Cooling

Emissions Standards:

Particulate Matter

When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape a building or equipment in such a manner and amount as to cause a nuisance or to avoid any rule or regulation, the Director may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

ADEM Admin. Code R. 335-3-4-.02(3)

Opacity

Emissions shall not exceed 20% equivalent opacity as determined by a 6-minute average, except during one 6-minute period in any 60 minute period the equivalent opacity may exceed 20%, but shall not exceed 40%.

ADEM Admin. Code r. 335-3-4-.01

Expected Emissions Pouring and Casting:

Particulate Matter

The expected particulate matter emissions from this process are 9.33 lbs/hr (9.33 TPY). This is based on a building efficiency of 50% and 2000 operating hours per year.

Expected Emissions Cooling:

Particulate Matter

Expected particulate matter emissions from the Cooling Process are 4.67 lbs/hr (4.67 TPY). This is based on the assumption that the building enclosure has a efficiency of 50% and operating 2000 hours per year.

Emission Monitoring:

This source is subject to no additional specific requirements other than those listed in the General Permit Provisos. This area will be monitored and action taken as necessary to minimize emissions.

Compliance Assurance Monitoring (CAM)

This unit is not subject Compliance Assurance Monitoring because it does not have a control device and the pre-controlled emissions are not greater than the major source threshold.

Abrasive Blasting (Wheelabrator with shared Baghouse)

Emissions Standards:

Particulate Matter

0.80 lb/ton of steel produced

40 CFR §63.10686(c)(1)

Or

12 mg/dscm (0.0052 grains of PM per dry standard cubic foot (gr/dscf))

40 CFR §60.272 a(a)(1)

(**Note: These are the AOD vessel PM limits but the Abrasive Blasting unit shares the same baghouse, therefore, when operating at same time as AOD vessel the PM limit at the baghouse will be the same as the AOD operating alone**.)

or

$E = 3.59 (P)^{0.62}$ ($P < 30$ tons/hr)
$E = 17.31(P)^{0.16}$ ($P \geq 30$ tons/hr)
Where E = Emissions in pounds per hour

P = Process weight per hour in tons per hour

ADEM Admin. Code R. 335-3-4-.04(1)

When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape a building or equipment in such a manner and amount as to cause a nuisance or to avoid any rule or regulation, the Director may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

ADEM Admin. Code R. 335-3-4-.02(3)

Opacity

Emissions shall not exceed 20% equivalent opacity as determined by a 6-minute average, except during one 6-minute period in any 60 minute period the equivalent opacity may exceed 20%, but shall not exceed 40%.

ADEM Admin. Code R. 335-3-4-.01(1)

Expected Emissions:

Expected particulate matter emissions from the Abrasive Blasting Process are 0.04 lb/hr (0.02 TPY). This is based on the baghouse efficiency of 99% and operating 1000 hours per year.

Emission Monitoring:

Particulate Matter

Perform **monthly** observations of the hopper, fan, and cleaning cycle for proper operation and complete a visual check of all hoods and ductwork to verify proper operation of the baghouse. The facility will inspect baghouse structure, access doors, door seals and bags annually.

(**Note:** This baghouse is shared with the AOD vessel and has specific requirements under NSPS 40 CFR 60, Subpart AAa)

Opacity

The facility's CAM plan for the AOD **(with a shared baghouse with the Abrasive Blasting unit)** requires daily visible emissions observations performed according to 40 CFR Part 60 Method 9 requirements.

Compliance Assurance Monitoring (CAM)

Abrasive Blasting is not subject Compliance Assurance Monitoring because the pre-controlled emissions are not greater than the major source threshold.

Miscellaneous Facility Wide

The facility is subject to the provisions of 40 CFR Part 63, Subpart YYYYY, NESHAP for Area Sources: Electric Arc Furnace Steelmaking Facilities, specifically 63.10685. Compliance with 63.10685 will be determined by certifying that the incoming scrap does not contain motor vehicle scrap and by restricting utilization of incoming scrap that contains chlorinated plastics, lead or free organic liquids.

In addition, the facility is also subject to the provisions of 40 CFR Part 63, Subpart ZZZZZ, NESHAP for HAPs for Iron and Steel Foundries Area Sources, specifically §63.10885 and §63.10886. Compliance with §63.10885 will be demonstrated by having a metallic scrap management program and by certifying that the scrap does not contain motor vehicle scrap. In order to comply with §63.10886, the facility will not use binder catalyst formulation that contains methanol.

The facility **must submit semi-annual** compliance report to ADEM in accordance with §63.10. The report must clearly identify any deviation from the pollution prevention management practices in §63.10885 and §63.10886.

CAM Plan for Electric Arc Furnace #1

	Indicator 1	Indicator 2	Indicator 3
I. Indicator	Visible Emissions	Inspection/Maintenence	Reference Method Testing
Measurement Approach	Measured using EPA Reference Method procedures	Daily inspection according to I/M checklist; maintenance performed as needed	Emissions testing using methods 1-4 and 5
II. Indicator Range	While the unit is operating, an excursion is defined as the presence of visible emissions greater than 3% opacity. Excursions trigger an inspection, corrective action, and a reporting requirement.	Not Applicable	Particulate Matter < 0.0052 gr/dscf
III. Performance Criteria A. Data Representativeness	Observe visible emissions at each exit for at least three six-minute periods per day	Inspections are performed at the baghouse	Test samples done at the exhaust of the baghouse
B. Verification of Operation Status	Not Applicable	Not Applicable	Not Applicable
C. QA/QC Practices and Criteria	The observer will be certified in Reference Method 9	Qualified personnel perform inspection	Use reference method protocols
D. Monitoring Frequency	An instantaneous observation will be performed daily.	Daily inspection	Initial/Subsequent Compliance Test
E. Data Collection Procedures	The VE observation will be recorded with the time, date, and name of the observer.	Records are maintained to document daily inspections and any required maintenence	As required by Methods 1-4 and 5
F. Averaging Period	Instantaneous	N/A	N/A

CAM Plan for Electric Arc Furnace #2

	Indicator 1	Indicator 2	Indicator 3
I. Indicator	Visible Emissions	Inspection/Maintenence	Reference Method Testing
Measurement Approach	Measured using EPA Reference Method procedures	Daily inspection according to I/M checklist; maintenance performed as needed	Emissions testing using methods 1-4 and 5
II. Indicator Range	While the unit is operating, an excursion is defined as the presence of visible emissions greater than 3% opacity. Excursions trigger an inspection, corrective action, and a reporting requirement.	Not Applicable	Particulate Matter < 0.0052 gr/dscf
III. Performance Criteria G. Data Representativeness	Observe visible emissions at each exit for at least three six-minute periods per day	Inspections are performed at the baghouse	Test samples done at the exhaust of the baghouse
H. Verification of Operation Status	Not Applicable	Not Applicable	Not Applicable
I. QA/QC Practices and Criteria	The observer will be certified in Reference Method 9	Qualified personnel perform inspection	Use reference method protocols
J. Monitoring Frequency	An instantaneous observation will be performed daily.	Daily inspection	Initial/Subsequent Compliance Test
K. Data Collection Procedures	The VE observation will be recorded with the time, date, and name of the observer.	Records are maintained to document daily inspections and any required maintenence	As required by Methods 1-4 and 5
L. Averaging Period	Instantaneous	N/A	N/A

CAM Plan for AOD Vessel

	Indicator 1	Indicator 2	Indicator 3
I. Indicator	Visible Emissions	Inspection/Maintenence	Reference Method Testing
Measurement Approach	Measured using EPA Reference Method procedures	Daily inspection according to I/M checklist; maintenance performed as needed	Emissions testing using methods 1-4 and 5
II. Indicator Range	While the unit is operating, an excursion is defined as the presence of visible emissions greater than 3% opacity. Excursions trigger an inspection, corrective action, and a reporting requirement.	Not Applicable	Particulate Matter < 0.0052 gr/dscf
III. Performance Criteria M. Data Representativeness	Observe visible emissions at each exit for at least three six-minute periods per day	Inspections are performed at the baghouse	Test samples done at the exhaust of the baghouse
N. Verification of Operation Status	Not Applicable	Not Applicable	Not Applicable
O. QA/QC Practices and Criteria	The observer will be certified in Reference Method 9	Qualified personnel perform inspection	Use reference method protocols
P. Monitoring Frequency	An instantaneous observation will be performed daily.	Daily inspection	Initial/Subsequent Compliance Test
Q. Data Collection Procedures	The VE observation will be recorded with the time, date, and name of the observer.	Records are maintained to document daily inspections and any required maintenence	As required by Methods 1-4 and 5
R. Averaging Period	Instantaneous	Not Applicable	Not Applicable

Recommendation

Based on the above analysis and pending the resolution of any comments received during the 30-day public comment period and 45-day EPA review, I recommend issuing Alloy Resource's renewal Title V Major Source Operating Permit.

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Paul J. Vaccaro
Industrial Minerals Sections
Energy Branch
Air Division

February 22, 2016
Date